Paper No. 30

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte NOBUYUKI KAMBE
and XIANGXIN BI

Appeal No. 2001-2242
Application 08/962,362[1]

ON BRIEF

Before JERRY SMITH, BARRETT, and RUGGIERO, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-6 and 20-30, all the pending claims in the application.

We affirm.

[1] Application for patent filed October 31, 1997, entitled "Phosphors."

BACKGROUND

The disclosed invention involves fluorescent particles with average dimensions of 5 to 100 nanometers (nm), called nanoparticles, which have a very uniform distribution of diameters. The fluorescent particles emit light in response to electrical stimulation. Therefore, the particles are suitable for incorporation into display devices wherein the particles are selectively excited to produce an image. The use of highly uniform particles provides for greater control over the emissions of the particles. Particles with a narrow particle size distribution have a corresponding light emission band covering a narrow frequency range (color). The uniformity of the particles leads to processing advantages with respect to the formation of thin layers with sharp edges. Nanoparticles with a very narrow particle size distribution are produced by a laser pyrolysis system described in the disclosure, but not claimed. These highly uniform particles are particularly well suited for the formation of improved display devices.

The following claim further illustrates the invention.

> 1. A display device comprising phosphor particles having an average diameter less than about 100 nm and wherein the phosphor particles comprise a collection of particles having a diameter distribution such that at least about 95 percent of the particles have a diameter greater than about 40 percent of the average diameter and less than about 160 percent of the average diameter.

The examiner relies on the following references:

Jaskie	5,442,254	August 15, 1995
Bhargava	5,455,489	October 3, 1995

Claims 1, 4-6, 20-25 and 27-30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Jaskie.

Claims 2, 3, and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Jaskie in view of Bhargava.

We refer to the final rejection (Paper No. 18) (pages referred to as "FR__") and the examiner's answer (Paper No. 24) (pages referred to as "EA__") for a statement of the examiner's rejection, and to the appeal brief (Paper No. 23) (pages referred to as "Br__") and the reply brief (Paper No. 25) (pages referred to as ("RBr__") for a statement of appellants' arguments thereagainst.

OPINION

Grouping of claims

The claims are argued to stand or fall together (Br5). Therefore, for purposes of this appeal, the claims will stand or fall together with claim 1.

The disclosed and claimed invention

Appellants describe a laser pyrolysis system for "the production of particles with a highly uniform size distribution and structural homogeneity" (spec. at 11, lines 19-20). The "collection of particles has an average diameter ... preferably

from about 5 nm to about 100 nm" (spec. at 18, lines 5-8). In addition, "the particles generally have a distribution of sizes such that at least 95 percent of the particles have a diameter greater than about 40 percent of the average diameter and less than about 160 percent of the average diameter" (spec. at 19, lines 6-10). The specification describes that very small particle diameters allow for adjustment of emission characteristics without the need to activate the particles with a second metal (spec. at 20, lines 1-4) and that the particles may be phosphors (spec. at 21, lines 15-16).

Appellants seek to claim phosphor particles having a particular average size (i.e., "an average diameter less than about 100 nm" in claim 1) and uniformity (i.e., "about 95 percent of the particles have a diameter greater than about 40 percent of the average diameter and less than about 160 percent of the average diameter" in claim 1), the average diameter ±60%, without claiming the method of producing the particles. The size and uniformity of the particles are said to result from the disclosed laser pyrolysis system; however, since the laser pyrolysis system is not claimed, particles having the claimed size and uniformity produced by any process will satisfy the claims.

It is apparently appellants' position (although not expressly stated) that they are entitled to broadly claim the particle size and uniformity limitations without claiming the

method of production because they were the first ones to come up with a method that allows production of particles having these uniformity characteristics.

The rejection over Jaskie

Jaskie discloses that the properties of quantum contained particles are designed chiefly by selecting the size (diameter) (col. 6, lines 39-41). It is disclosed that the color of the emitted light is adjusted, or tuned, by adjusting the size distribution of the particles during manufacture (col. 6, lines 43-46). It is disclosed that 50 Å (5 nm) diameter particles have a yellow to yellow orange color, reducing the size of the particles moves the emitted color to the blue end of the spectrum, and by increasing the size, the emitted color is moved toward the red end of the spectrum, with the maximum size being 100 Å (10 nm) (col. 6, lines 46-54). The particle materials provide luminescence (col. 5, lines 6-12) and are "phosphors," as claimed. Thus, Jaskie discloses quantum contained phosphor particle sizes approximately 10 times smaller than appellants' particle sizes and used for the same purpose.

Jaskie discloses two methods of manufacturing quantum contained particles, the micelle or inverse micelle technique and an etching technique (col. 6, line 62 to col. 7, line 27), and a method of size selection (col. 7, lines 28-40). The micelle or

inverse micelle technique is described to produce nanocrystals where "[v]ariations in size are generally in the range of ±7% in diameter" (col. 7, lines 10-11). Accordingly, although not noted by the examiner or appellants, it appears that Jaskie discloses a method of producing particles having a highly uniform distribution of diameters within the claimed range (although Jaskie does not specifically mention a 95 percent figure). Nevertheless, we also consider the examiner's reasoning.

The examiner finds that Jaskie does not disclose the claimed range of particle sizes (FR3). The examiner states (FR3): "Jaskie teaches, however, that the specification of a desired particle range is within the level of skill of the art. See col. 7, lines 34-40. It would have been obvious to specify a desired particle range because the specification of a desired particle range is generally recognized to be within the skill of the art." Appellants admit that "the Jaskie patent discloses ... the desirability of having highly uniform fluorescent particles" (Br5) and do not appear to challenge the examiner's conclusion.

The examiner further reasons that taking particles in Jaskie having a yellow color with a 50 Å (5 nm) size as the average particle size, the narrower ± 40% range of particle size recited in claim 5 would require a range of particle sizes from 3 to 7 nm (FR3). The examiner reasons that the wavelength range of visible light from 400 to 800 nm would yield a particle distribution of

from 4.14 to 5.84 nm which is within this range (FR3). That is, yellow light has a wavelength of about 590 nm which corresponds to a 5 nm particle size. Assuming the particle size is proportional to the wavelength, then blue light (at one end of the visible light range) with a wavelength of 400 nm has a particle size of 3.39 nm and red light (at the other end of the visible light range) with a wavelength of 700 nm (note that Jaskie discloses a range of 400 nm to 690 nm for visible light, col. 1, line 49) has a particle size of 5.93 nm, which is within the claimed range of particle sizes. Appellants do not challenge this reasoning. We agree that one of ordinary of ordinary skill in the art would have been motivated from Jaskie to select a highly uniform distribution of particles sizes in order to maintain a desired color. If one skilled in the art wanted to maintain a yellow color, for example, the range of particle sizes would be narrower than for the range of visible colors in the examiner's example.

The issue

Appellants do not contest that Jaskie discloses or makes obvious the particle size and uniformity limitations of claim 1. And, appellants do not contest that Jaskie discloses how to make particles having the claimed sizes mixed with other sizes. Instead, appellants argue that Jaskie does not enable one skilled

in the art to separate out particles into a batch having the claimed distribution range of sizes. Therefore, it is apparently appellants' position (although not expressly stated) that they are entitled to broadly claim the particle size and uniformity limitations without reciting the method of production because they were the first ones to come up with a method that allows production of particles having the claimed distribution of sizes.

The issue is whether Jaskie contains an enabling disclosure for making particles having the claimed distribution range of sizes. We agree that the disclosure must be adequate to permit one of ordinary skill in the art to make particles of the claimed size and size distribution. See Motorola Inc. v. Interdigital Technology Corp., 121 F.3d 1461, 1471, 43 USPQ2d 1481, 1489 (Fed. Cir. 1997) ("In order to render a claimed apparatus or method obvious, the prior art must enable one skilled in the art to make and use the apparatus or method.").

Jaskie is presumed enabled

Jaskie claims "particles each quantum confined by a diameter dictated by a specific desired color of emitted light" (claim 1) and having a diameter "less than approximately 100 Å" (claim 9). Jaskie discloses that a specific desired color, say yellow, corresponds to a particle diameter of about 50 Å (5 nm). For the particles to have a diameter dictated by the specific color

yellow, the diameters must be within a fairly narrow range around this diameter, much narrower than the range claimed by appellants, or other colors will be produced. Thus, the claims require particles of the claimed size and size distribution. Since Jaskie is a patent, it must be presumed that the disclosure enables one skilled in the art to make these particles. The presumption of validity puts the burden on appellants to prove that Jaskie does not have an enabling disclosure, rather than on the Office to prove that it does. The presumption may be overcome by sufficient evidence.

Jaskie teaches a method of preparing particles with uniform size

Jaskie discloses (col. 6, line 62 to col. 7, line 1):

> There are presently a wide variety of methods for manufacturing quantum contained particles, at least one of which uses a Micelle technique that basically allows the particles to be made in a bucket using wet chemistry. The Micelle technique is a method of precipitation in a fluid in the presence of a stabilizer that binds to the growing crystal, preventing further growth or agglomeration.

Jaskie describes an inverse micelle[2] example for making nanocrystals (col. 7, lines 1-9) and states that "[v]ariations in size are generally in the range of ±7% in diameter" (col. 7, lines 10-11), implying that most particles are within this range, which is well within the claimed range. Thus, this technique of

[2] A description of "micelle" from the McGraw-Hill Encyclopedia of Science & Technology, Vol. 11 (7th ed. McGrawHill, Inc. 1992), pp. 117-118, is attached.

making nanoparticles does not appear to require size selection. Jaskie refers to a symposium paper, "Observations of Melting in 30 Å Diameter CdS Nanocrystals" by A.N. Goldstein, V.L. Colvin, and A.P. Alivasatos, in "Clusters and Cluster Assembled Materials," Materials Research Society Symposium Proceedings, Fall 1990, at col. 7, lines 11-17, which we consider to be incorporated by reference. A copy of this paper is attached. The paper states (p. 271-72): "New developments in chemical methods of preparation, have enabled the synthesis of narrow size distributions of highly crystalline, nanometer size, crystallites of inorganic semiconductors like CdS and GaAs" (emphasis added). One footnote to this sentence refers to an article entitled "Surface Derivatization and Isolation of Semiconductor Cluster Molecules," by M.L. Steigerwald et al., J. Am. Chem. Soc. 110, 1988, pp. 3046-3050 (copy attached), which describes preparing molecules of semiconductor solid that are size-selected, in particular, clusters that "have a mean cross sectional dimension of 17(3) by 19(5) Å (where the numbers in parentheses are one standard deviation)" (p. 3048). Since one standard deviation includes about 68% of the things being measured and two standard deviations includes about 95% of the things being measured, it can be seen that two standard deviations is 17±6 by 19±10 Å which is within the claimed distribution. Although the Goldstein and Steigerwald references are not applied in the rejection, they are

indirectly relied on by Jaskie and clearly demonstrate that it was known to those in the art how to prepare nanoparticles with uniform size distributions.[3] We find that Jaskie describes making nanocrystals by an inverse micelle technique with a ±7% range of variation of diameter. Appellants do not address this disclosed method of making nanocrystals of a uniform size either in the arguments or the expert declarations.

Jaskie also describes manufacturing quantum contained structures down to 10 Å by common etching techniques (col. 7, lines 17-27). It appears that these structures could be considered particles; claim 1 does not require the particles to be in a free or powder form.[4] However, this method does not describe a range of particle sizes. Appellants do not address this method of making quantum contained structures.

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[3] This technique of isolating clusters of nanoparticles [nanoclusters) of specific sizes by terminating the particle surfaces is also evidenced by the discussion of nanoclusters in Kirk-Othmer Encyclopedia of Chemical Technology, Vol. 18 (4th ed. John Wiley & Sons 1996), pp. 842-843, 859 (copy attached) at p. 843: "With the proper surface-capping agents, clusters of varying sizes can be isolated as powders ...." Kirk-Othmer is a standard reference work that is cited only to substantiate facts in the evidentiary showing.

[4] This manufacturing technique also appears to be mentioned in Kirk-Othmer, p. 843: "[S]emiconductor nanoclusters can be directly synthesized in the polymer film (26-30).").

Appellants' arguments and expert declarations are not persuasive to show that Jaskie lacks an enabling disclosure

Jaskie discloses (col. 7, lines 28-40):

> The tuning (size selection) is also accomplished in a variety of ways, at least one of which includes a wet filtering technique. The quantum contained particles (of all sizes) are suspended in a wet mixture. One end of a cloth is immersed in the liquid and the mixture is allowed to move up the cloth by capillary action, aided by an electric field if desired. The quantum contained particles will move up the cloth a distance directly proportional to their size. Thus, at a predetermined height on the cloth all of the quantum contained particles will be substantially the same size. Utilizing this or a similar technique the quantum contained particles can be easily separated into desired sizes.

This describes a method of separating quantum contained particles based on their size.

Appellants argue that "the production of particles with the claimed narrow particle size distribution was not within the level of skill in the art" (Br6) and "the discussion in the Jaskie patent [of wet filtration at col. 7, lines 28-40] did not permit the formation of the narrow particle size distributions disclosed and claimed by Applicants" (Br6) as evidenced by the declarations of Professor Singh and Professor Bricker (Br6). That is, it is argued that the wet filtration method of Jaskie does not enable one of ordinary skill in the art to make the claimed invention. Appellants' arguments are best addressed in connection with the declarations on which they are based.

Singh declaration

Professor Singh is a consultant to the assignee NanoGram Corporation (Singh decl. ¶ 5) and therefore is not a totally disinterested party. Nevertheless, Prof. Singh has impressive credentials and his testimony must be given weight.

Initially, we note that Prof. Singh's declaration does not address making of uniform sized particles by the disclosed inverse micelle technique in Jaskie, which is said to produce particles having a variation in size of ±7% (col. 6, line 62 to col. 7, line 17). Nor has Prof. Singh discussed Jaskie's description of making quantum confined structures by etching (at col. 7, lines 17-27), where the particles are on a surface instead of in a free form. Prof. Singh's education and experience do not appear to be in the area of preparing nanoparticles by the chemical inverse micelle technique or the etching technique. Thus, even if Prof. Singh's declaration is persuasive as to nonenablement of Jaskie's wet filtration process, the declaration fails to show that other methods in Jaskie do not enable one of ordinary skill to make the claimed invention. Although the declaration is not persuasive for this reason, we nevertheless also consider Prof. Singh's testimony regarding the wet filtration method.

Prof. Singh states that, to his knowledge, no experimental results based on the separation of nanoparticles by the wet

filtration process described by Jaskie have ever been reported in the literature (Singh decl. ¶ 7) and since such chromatography techniques are not known for the separation of nanoparticles, a person of ordinary skill in the art would be expected to expend a substantial amount of inventive effort to practice the wet filtration technique and, absent at least some preliminary results, there would be no reasonable expectation of success (Singh decl. ¶ 7). Prof. Singh offers his opinion that the wet filtration approaches in Jaskie are highly speculative (Singh decl. ¶ 7). Prof. Singh states that based on his extensive knowledge in the nanoparticle field, it is his opinion that tuning could not be performed by the wet filtration approach outlined in Jaskie without the expenditure of an undue amount of experimentation (Singh decl. ¶ 10).

The examiner states that Prof. Singh "fails to disclose what data basis [sic, databases], public records, or patent files" (EA6) were searched, or "what search terms, logical statements, or search strategy" (EA6) were applied to support his statement that wet filtration is not described in the literature (EA6).

Appellants responds that "Professor Singh is one of the best experts in the world to attest to such a fact, i.e., that the Jaskie separation approach is not known to persons of skill in the art" (RBr5-6) and "Professor Singh is an invited speaker at most of the major particle science conferences in the world and

is, thus, aware of the cutting edge research being performed in the world" (RBr6).

While Prof. Singh's has impressive credentials, a person cannot be expected to know everything in the art. This is the reason for the hypothetical person of ordinary skill standard in obviousness. We think it is not unreasonable, in questioning the enablement of a patent, to require some searching of the literature rather than reliance on personal knowledge to support a statement that Jaskie's method was not described in the literature. The burden of showing lack of enablement is on appellants. Prof. Singh's conclusion that it would require an undue amount of experimentation to make the wet filtration approach work is evidently based solely on his lack of personal knowledge of any description of the process in the literature. However, since we have no evidence of a search we can give little weight to Prof. Singh's statement that the process is not described in the literature or the conclusion that undue experimentation would be required. Prof. Singh's statement that the filtration approach in Jaskie is highly speculative is a mere conclusion which is not supported by any factual reasoning as to why the process would be unlikely to work as described. Thus, these statements by Prof. Singh are not entitled to weight.

The examiner states that the declaration does not present any experimental results, evidence of tests conducted, methods

evaluated, or any factual evidence, but consists of mere arguments and conclusions (EA5-6).

Appellants argue that no experiments are performed without relying on the experience of the experimenters, experiments must be designed and interpreted, and "Professor Singh's Declaration is ... based on a multitude of experiments performed by himself and his students [over the years]" (RBr4).

Nevertheless, past experiments which form the basis for Prof. Singh's experience and expertise are not experiments which show whether the wet filtration in Jaskie will work. In any case, the declaration does not provide any factual reasons, based on such prior experiments, why the wet filtration method in Jaskie would not be expected to work.

Prof. Singh states that since the Jaskie wet filtration technique would be difficult or impossible to scale up to commercial quantities, it is unlikely that any effort will ever be spent on developing such approaches (Singh decl. ¶ 8).

Whether or not effort would be spent developing the Jaskie process does not tend to show that the Jaskie technique is unworkable as described to one of ordinary skill in the art.

Prof. Singh states that at the time of filing there were no filtration approaches publicly known that could create a collection of phosphorescent nanoparticles with a very narrow

size distribution and, at best, these filtration techniques could only exclude micron scale contaminants (Singh decl. ¶ 9).

This statement can be considered to be related to the statement in Jaskie that "[t]he tuning (size selection) is also accomplished in a variety of ways" (col. 7, lines 28-29) and the question of whether one of ordinary skill in the art knew of other ways to perform size selection. Assuming it is correct that there were not other publicly known filtration approaches for nanoparticles, this does not prove that the wet filtration approach will not work and does not prove that other approaches for size selection were not known.

For the reasons stated above, the declaration of Prof. Singh is not entitled to weight.

Bricker declaration

The declaration by Professor Bricker, submitted with the amendment after final on October 10, 2000 (Paper No. 21), was deemed untimely by the examiner and it was noted that it would not be considered in the advisory action of October 20, 2000 (Paper No. 22). Nevertheless, since the examiner's answer refers to the declaration by Prof. Bricker, it appears to have been considered and will be addressed here.

Initially, we note that Prof. Bricker's declaration also does not address making of uniform sized particles by the

disclosed inverse micelle technique in Jaskie, which is said to produce particles having a variation in size of ±7% (col. 6, line 62 to col. 7, line 17). Nor does Prof. Bricker discuss Jaskie's description of making quantum confined structures by etching (at col. 7, lines 17-27). Prof. Bricker's education and experience do not appear to be in the area of preparing nanoparticles by the chemical inverse micelle technique or the etching technique. Thus, even if Prof. Bricker's declaration was persuasive as to nonenablement of Jaskie's wet filtration process, the declaration fails to show that other methods in Jaskie do not enable one of ordinary skill to make the claimed invention. Although the declaration is not persuasive for this reason, we nevertheless also consider Prof. Bricker's testimony regarding the wet filtration method.

Prof. Bricker's declaration of unworkability seems to be based on the fundamental assumption that a process where a mixture of different sized particles is continuously loaded onto the cloth will not work to separate different size classes of quantum particles because particles are continuously remixed with particles of other sizes as additional particles are loaded onto the cloth (Bricker decl. ¶ 9). We interpret this to mean that if it is assumed that 50 Å particles climb to 10 inches and 30 Å particles climb to 11 inches, under Jaskie's technique one can never separate out 50 Å particles because there is always some

smaller particles on their way through this zone on the way to a higher point in a continuous process.

The flaw in this reasoning is that Jaskie does not say that the process must be continuous (or commercial). The process can be a one-time run where the particles climb to a level depending on their size and the cloth is cut at an appropriate zone to retrieve particles of a specific desired size range. Because the declaration seems to be based on an erroneous assumption, Prof. Bricker's declaration is not persuasive.

Prof. Bricker also discusses that Jaskie provides no direct information on the properties of the liquid that the particles are suspended in, the surface characteristics of the cloth, or the surface properties of the quantum particles (Bricker decl. ¶ 10). It is stated that "the surface properties of the cloth used in the described separation is critical" (Bricker decl. ¶ 10) and that no cloth exists which provides differential partitioning of the solutes, i.e., the quantum particles, between a mobile phase and a stationary phase, the cloth (Bricker decl. ¶ 10). It is argued that the addition of an electric field would not solve these problems (Bricker decl. ¶ 11).

To the extent these reasons are dependent on the assumption of a continuous process, the reasons are not persuasive as already discussed. In addition, we note that the description in Jaskie is directed to the person of ordinary skill in the art,

which is the art of separating solid inorganic nanoparticles, and thus does not need to disclose details which would be known to the person of ordinary skill. Prof. Bricker's declaration is not persuasive because it relies on the lack of express teachings of materials in Jaskie without addressing what would have been known one of ordinary skill in the art.

Jaskie also discloses that "[t]he tuning (size selection) is also accomplished in a variety of ways" (col. 7, lines 28-29), although the only way described is wet filtering. Assuming that Prof. Bricker is correct that Jaskie does not enable one skilled in the art to make the claimed narrow particle size distributions by the wet filtration process, there is no evidence that one skilled in the art would not know of any other way to provide the required size selection.

For the reasons stated above, the declaration of Prof. Bricker is not entitled to weight.

Millipore product literature

Appellants cite product information in the brief from Millipore Corporation (Millipore) to show that commercial filters are not an effective means of creating narrow particle size distributions (Br15).

The examiner states that the fact that appellants have found a vendor that provides a filter that is not suitable for

nanoparticle separation is not persuasive evidence that no such filter exists (EA7).

Appellants respond that the Millipore represents the latest advances in filtration technology for improving size uniformity and the fact that it is dated two years after appellants' filing date and does not disclose the filters has significant probative value (RBr6).

We agree with the examiner's position. The purpose of Millipore filters is to retain the small number of defect causing "large" particles (> 1 micron) without retaining the desirable, small particles (30 to 200 nm). This does not prove that filters to filter out particles outside of a certain range do not exist or cannot be built. Appellants' argument based on Millipore is not persuasive that Jaskie is not enabled.

Parker patent

In the examiner's answer, the examiner refers to U.S. patent 5,460,701 to Parker et al. as disclosing the use of a mechanical filter for the collection of nanocrystals (EA7). Parker is not applied in any ground of rejection.

Appellants argue that while Parker describes a filter for collecting nanoparticles, the collection process does not discriminate in size and is not relevant to the issue of size

separation to produce a more uniform collection of particles (RBr7).

We agree with appellants' argument and find the examiner's reasoning to be unpersuasive.

Lithium separation

In the final rejection, the examiner referred to the use of chromatography to separate lithium-6 from lithium-7 (FR6).

Appellants argue that while chromatography is a well developed field for chemical and biochemical separation, this experience does not extend to the separation of solid inorganic particles by size (Br11). It is argued that the examiner's reference to isotope separation of lithium is nonpersuasive because there is no expectation that ion-exchange chromatography would be expected to work for inorganic nanoparticles to separate them by size (Br11-12).

The examiner does not rely on the lithium example in the examiner's answer. Nevertheless, we agree with appellants' argument and find the examiner's reasoning to be unpersuasive.

Conclusion

We find that Jaskie discloses a method of making nanoparticles having a variation in size of ±7%. This teaching has not been addressed in appellants' arguments or in the

declarations of Prof. Singh or Prof. Bricker and, so, it has not been demonstrated that Jaskie does not enable one of ordinary skill in the art to make the claimed invention. In addition, we are not persuaded by the declarations of Prof. Singh and Prof. Bricker that Jaskie does not enable one skilled in the art to make the claimed invention for the reasons discussed in connection with those declarations. Accordingly, we conclude that appellants have not shown error in the rejection of claim 1. The rejections of claims 1-6 and 20-30 are sustained.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

JERRY SMITH
Administrative Patent Judge

LEE E. BARRETT
Administrative Patent Judge

JOSEPH F. RUGGIERO
Administrative Patent Judge

BOARD OF PATENT APPEALS AND INTERFERENCES

Appeal No. 2001-2242
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PETER S. DARDI
PATTERSON, THUENTE, SKAAR & CHRISTENSON, P. A.
4800 IDS CENTER
80 SOUTH 8TH STREET
MINNEAPOLIS, MN 55402-2100